F. E. MESTA.

BILLET TURNING DEVICE.

APPLICATION FILED SEPT. 9, 1908.

1,006,582.

Patented Oct. 24, 1911.

3 SHEETS—SHEET 1.

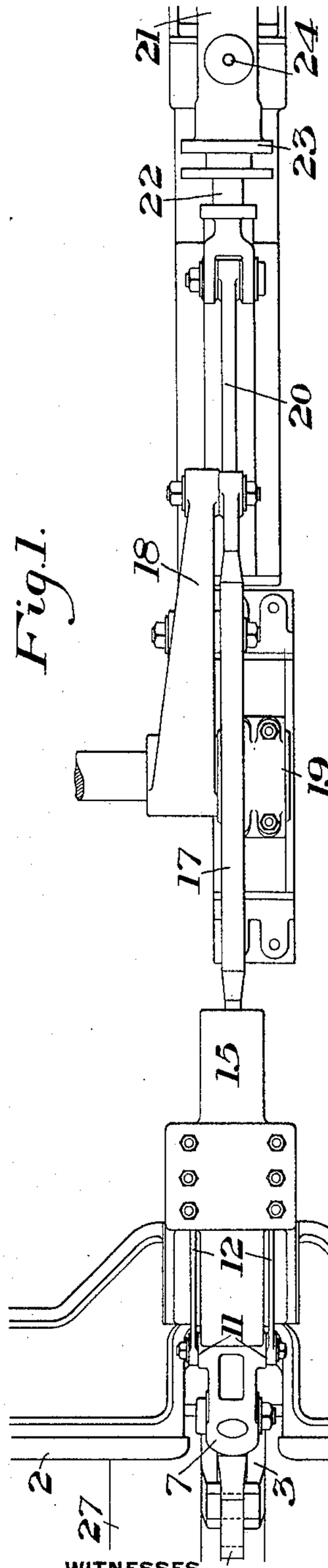


Fig. 1.

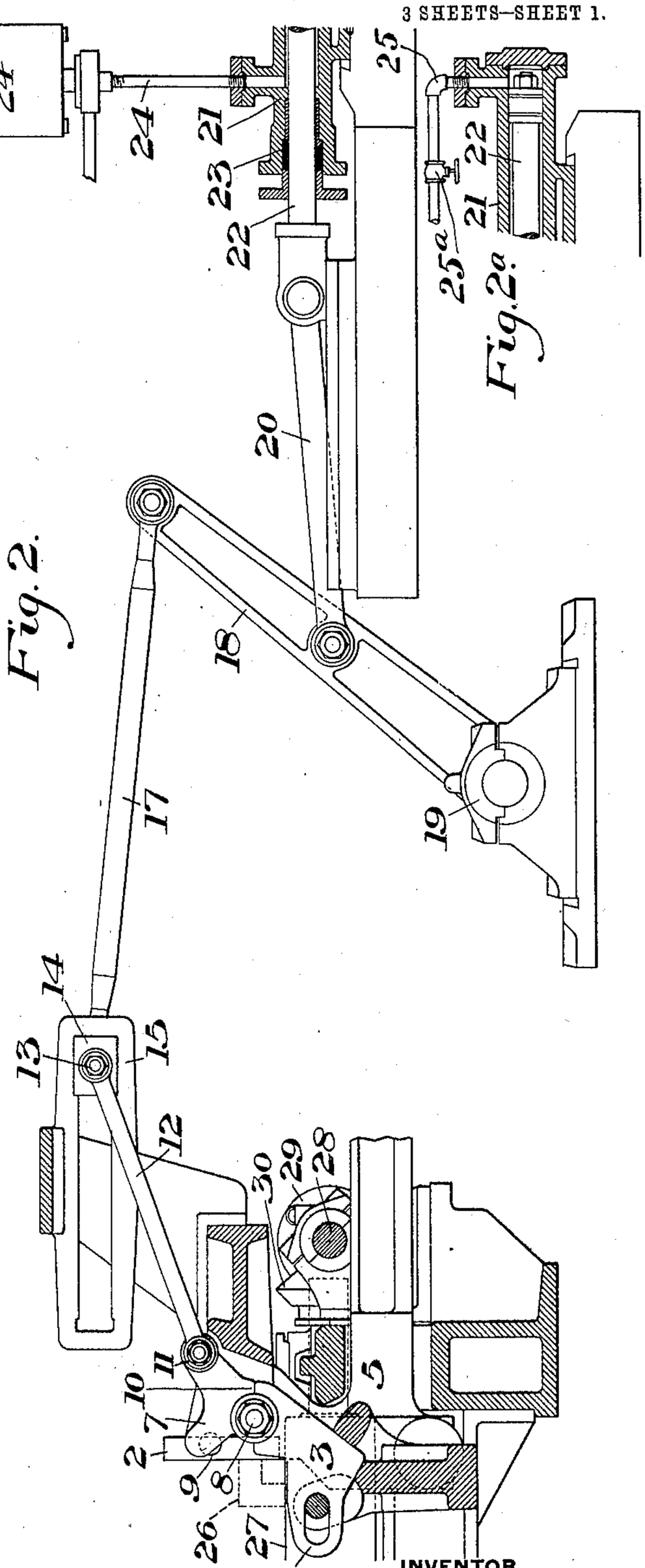


Fig. 2.

Fig. 2a.

WITNESSES

W. W. Swartz

G. L. Winters

INVENTOR

F. E. Mesta,

by Bakewell, Byrnes & Parmelee,

his Attys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

F. E. MESTA.

BILLET TURNING DEVICE.

APPLICATION FILED SEPT. 9, 1908.

1,006,582.

Patented Oct. 24, 1911.

3 SHEETS—SHEET 2.

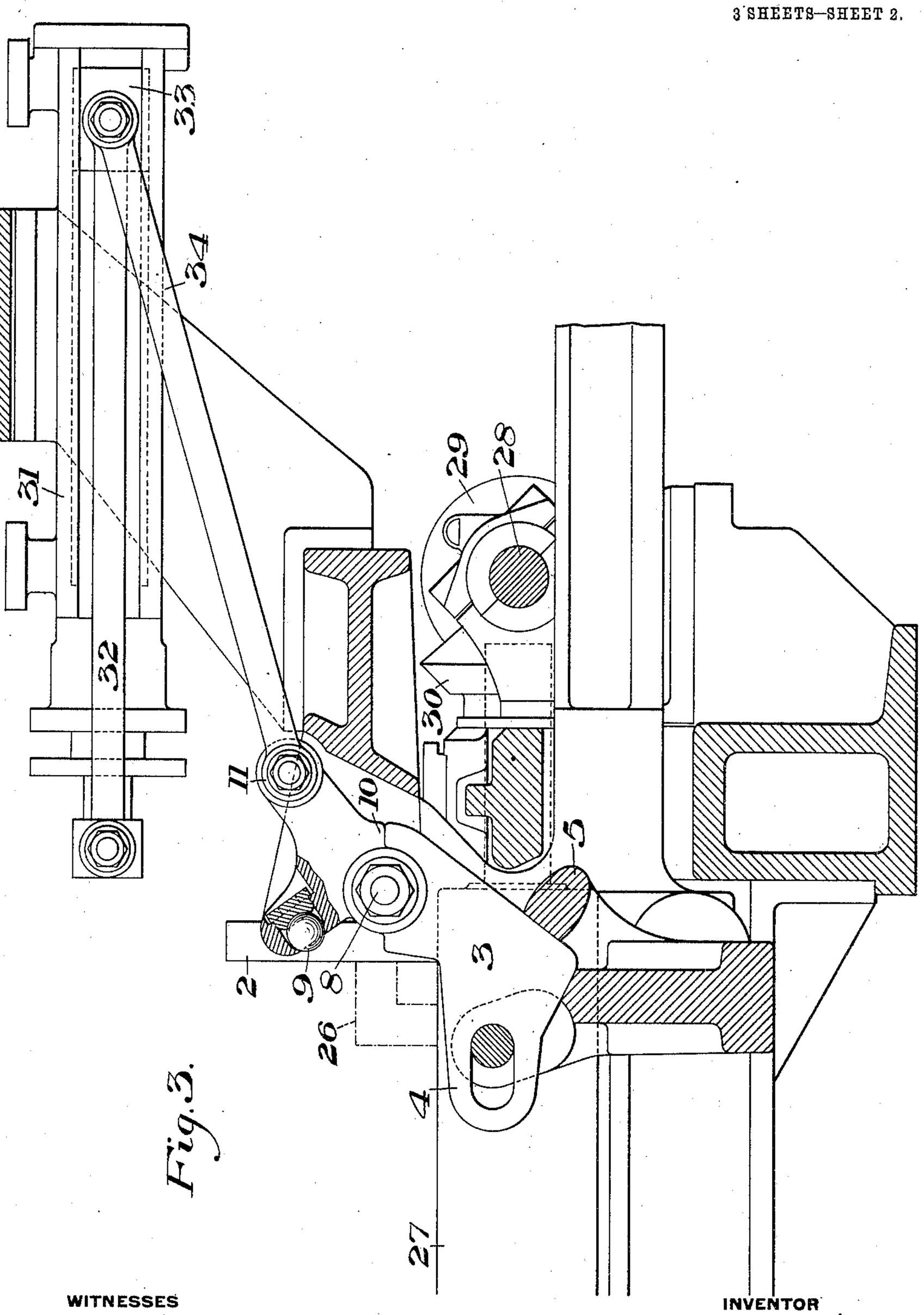


Fig. 3.

WITNESSES

W. W. Swartz

G. L. Winters

INVENTOR

F. E. Mesta,

by Bakewell, Byrnes & Parmelee

his Attys.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

F. E. MESTA.

BILLET TURNING DEVICE.

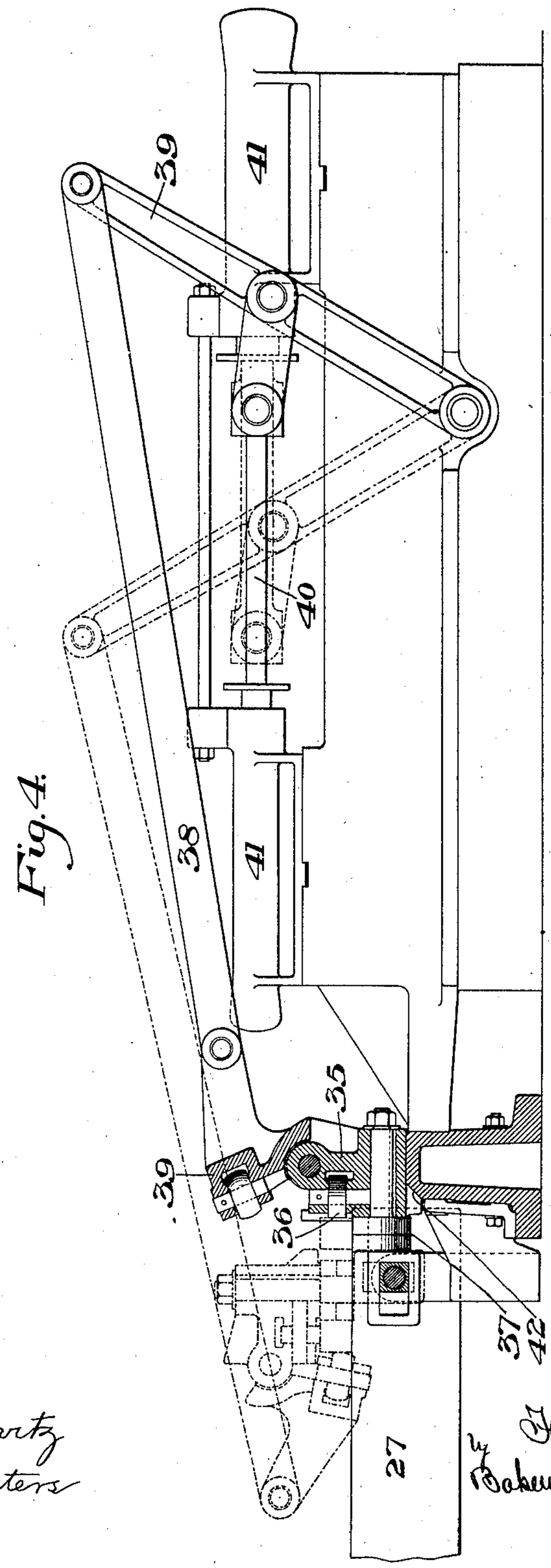
APPLICATION FILED SEPT. 9, 1908.

1,006,582.

Patented Oct. 24, 1911.

3 SHEETS—SHEET 3.

Fig. 4.



WITNESSES

W. W. Swartz

G. L. Winters

INVENTOR

F. E. Mesta,

by Bakewell, Byrnes & Parmelee,

his Attys

UNITED STATES PATENT OFFICE.

FREDERICK E. MESTA, OF PITTSBURGH, PENNSYLVANIA.

BILLET-TURNING DEVICE.

1,006,582. Specification of Letters Patent. Patented Oct. 24, 1911.

Application filed September 9, 1908. Serial No. 452,190.

To all whom it may concern:

Be it known that I, FREDERICK E. MESTA, of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Billet-Turning Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of my improved device applied to a rolling mill feed table; Fig. 2, is a sectional side elevation of the same; Fig. 2ª is a similar view of one portion of the cylinder which is broken away in Fig. 2. Figs. 3 and 4 are views similar to Fig. 2, showing other forms of the invention.

My invention relates to the turning of metal in connection with a rolling mill, and is designed to provide an improved turning device by which the metal will be gripped and positively turned over.

It is also designed to provide such a device adapted to turn the metal at different points in the width of the feed table and to provide a simple mechanism by which the metal is first gripped and then turned by means of the same actuating connection.

In the drawing, referring to Figs. 1 and 2, 2 represents the side guard of the usual ingot manipulator. As shown in Fig. 1, this side guard is cut away or recessed to receive my turning device, which is pivoted thereto. This turning device consists of a wrench, the lower jaw 3 of which has a slotted pivot connection 4 with a pivot pin on the side guard. This lower member normally rests upon a stop 5, secured in the rear of the side guard, thereby clearing the table. The upper jaw 7 of the wrench is pivoted to the lower member at 8, and is preferably provided with a ball or roller 9 in its contacting face. When not in action, these parts are in the position shown in Fig. 2, the upper jaw clearing the side guard and having a raised portion 10, abutting against the upper rear portion of the lower jaw to stop it in the open position shown. The upper jaw is connected by a pivot bearing 11, with an actuating member, which, in this form, is a connecting rod 12, pivoted at 13 to a cross head 14, movable in a cross head guide 15, secured to an upwardly and rearwardly projecting support 16 and which confines the movement of the cross head in a right line. The cross head is connected by the pivotal link 17 with a rock lever 18, pivoted to a stationary bearing at 19. This rock arm 18 is connected at an intermediate point by pivotal link 20 with the piston rod of hydraulic cylinder 21, having a piston 22. This cylinder is double acting, one end of the cylinder being closed and the other end provided with a stuffing box 23, for the piston rod. Continuous accumulator pressure is applied through pipe 24, to the smaller effective area of the piston, while pressure may be applied through pipe 25 to the other and larger effective area of the piston to operate the wrench.

In Fig. 2, I have shown diagrammatically an accumulator 24ª from which the pipe 24 leads, and in Fig. 2ª I have shown the pipe 25 as having a control valve 25ª.

In using the device, the pressure being applied to the larger effective area of the piston, the first action will be to swing down the upper jaw of the wrench until its ball face strikes the upper face of the metal, which is indicated by dotted line at 26. As soon as the metal is thus gripped, the further pressure turns the entire wrench on its pivotal connection with the side guard, the slotted connection allowing the wrench to accommodate itself to different sizes of billets. During this turning, the entire wrench acts as a single lever, turning on the pivot of the lower member as a fulcrum. The metal will thus be turned through an angle of ninety degrees and as more resistance is offered in turning the tighter will be the grip of the wrench. When the turning has been effected, the pressure is relieved from the face of the piston having a large effective area and the accumulator pressure then returns the parts to the ordinary position shown, first retracting the upper jaw and then turning the entire wrench back until the lower member strikes the stop. When the turned metal is moving across the table and the wrench is out of operation, the operating levers will be pulled by the force of the constant accumulator pressure and hold the wrench in position back of the side guard. This allows the side guard to sweep over the table with the wrench in the open position. In the form shown, the table rollers, indicated at 27, are rotated by a longitudinal shaft 28 having bevel gears 29, intermeshing with bevel gears 30, on the table rollers.

In Fig. 3, I show a form similar to that

of Figs. 1 and 2, except that the hydraulic cylinder 31 for actuating the wrench is mounted upon the moving frame, it having suitable flexible hose connections or elbow pipe connections with the accumulator or the other source of water under pressure. In this case I have shown the piston as provided with links 32, extending to rear cross heads 33, moving in guides at the side of the cylinder, this cross head having link connection 34 with the upper wrench member.

In Fig. 4 I show another form of the device in which the lower wrench member 35 is provided with horizontal rollers 36, and vertical rollers 37. These rollers are arranged to contact with the metal as it passes in front of the wrench. In this case I show the connecting rod 38 as pivoted to a rock arm 39, linked to a piston rod 40, common to two single acting cylinders 41, arranged in line with each other, pressure being constantly admitted to the smaller cylinder to move the piston in one direction, and the pressure when admitted to the larger cylinder, overcoming the resistance of the smaller cylinder to move the piston forwardly in the opposite direction, depending upon the movement desired to be given to the wrench. The final position of the wrench in turning is shown in dotted lines. In this case, the lower portion 42 of the side frame acts as a stop for the lower member of the wrench.

The advantages of my invention will be apparent to those skilled in the art. The parts are simple in character and few in number, and the jaw members are so arranged that a positive grip is obtained upon the piece to be turned, the piece itself, after being gripped, causing the jaw members to be locked to each other to turn as a single unit. The parts in their retracted position clear the feed table, and do not interfere with the transfer movements of the manipulator.

Various changes may be made in the form, construction and arrangement of the jaw members and their actuating connections within the scope of the appended claims.

While the apparatus has been described as using water or hydraulic pressure, obviously air or any fluid pressure may be employed as the actuating medium within the scope of the claims.

I claim:

1. A metal turning device for rolling mills having grippers arranged to engage the different faces of the metal, a stationary fulcrum pin for the grippers, and means to close the grippers and to shift them on the pin to change the fulcrum; substantially as described.

2. A metal turning device for rolling mills, comprising a wrench having a pivoted member, a second member pivoted to the first member and both members being mounted to turn upon the pivot of the first named member, a single actuating connection connected to the second member and arranged to turn the second member upon the first member, and then turn the wrench as a whole on the pivot pin of the first member to effect the transfer movement of the piece; substantially as described.

3. A metal turning device, comprising a support, a lower jaw member pivoted to the support, an upper jaw member pivoted to the lower jaw member, said upper jaw member having an initial movement on its pivot to grasp the piece to be turned between it and the lower jaw member, and the two jaw members then being connected through said piece to turn as a unit on the pivot of the lower member, and an actuating device connected to the upper member to effect both the described movements; substantially as described.

4. A metal turning device, comprising a support, a lower jaw member pivoted to the support, an upper jaw member pivoted to the lower jaw member, said upper jaw member having an initial movement on its pivot to grasp the piece to be turned between it and the lower jaw member, and the two jaw members then being connected through said piece to turn as a unit on the pivot of the lower member, and an actuating device connected to the upper member to effect both the described movements, the lower jaw member having a loose connection with its pivot in addition to its pivotal connection; substantially as described.

5. A metal turning device for rolling mills, comprising a wrench having two members, one of said members having a slot engaging a stationary pin and arranged to rotate thereon, and means for closing and turning the wrench; substantially as described.

6. A metal turning device for rolling mills, comprising a wrench having an upper and lower jaw pivoted to each other, a shiftable pivotal connection for one of the jaw members on which the wrench is turned, the pivotal connection being arranged to allow the wrench to adjust itself to different sizes of metal, and means to close the jaws and then turn the wrench; substantially as described.

7. A metal turning device for rolling mills, comprising a supporting member, a wrench having a shifting pivotal connection with the supporting member and arranged to accommodate the wrench to different sizes of metal, and mechanism for closing the wrench and then turning it on its supporting member; substantially as described.

8. A metal turning device for rolling

mills, comprising a wrench having a lower member mounted upon a pivot pin upon which the entire wrench is arranged to turn in a vertical plane, a stop for supporting the lower member in a position to clear the table, and an upper jaw pivoted to the lower jaw and having an actuating connection; substantially as described.

9. A metal turning device for rolling mills, comprising a wrench having a pivoted jaw member, a second jaw member pivoted to the first jaw member and also arranged to move bodily with the first jaw member, actuating connections connected to the second jaw member arranged to turn it on the first jaw member, and then turn both jaw members on the pivotal connection of the first jaw member, the actuating connections being arranged to reverse the movement of the second jaw member on the first jaw member and then move both jaws members on the pivotal connection of the first jaw member; substantially as described.

10. A metal turning device for rolling mills, comprising a wrench having a jaw member, a slot and pin pivotal connection for the jaw member, a second jaw member pivoted to the first jaw member, and actuating connections connected to the second jaw member arranged to swing it on the first jaw member and then swing the wrench on the slot and pin connection of the first jaw member, the actuating connections being arranged to return the wrench to its initial position, and allow the turned article to remain in its turned position; substantially as described.

11. A metal turning device for rolling mills, comprising a wrench having a jaw member having a slot and pin pivotal connection with a support, a second jaw member having a pivotal connection with the first jaw member, a stop on the first jaw member for the second jaw member, and actuating means to swing the second jaw member on the first jaw member and then swing the wrench on the slot and pin pivotal connection, the actuating means being arranged to reverse the movement of the second jaw member on the first jaw member, and then reverse the movement of the wrench on the slot and pin pivotal connection; substantially as described.

12. A metal turning device for rolling mills having grippers arranged to engage the different faces of the metal, a stationary fulcrum pin for the grippers, and means to close the grippers and to shift them on the pin to change the fulcrum, said device comprising a power cylinder, a piston therein, means for intermittently admitting pressure to one side of the piston and for maintaining a constant pressure at the opposite side of the piston; substantially as described.

In testimony whereof, I have hereunto set my hand.

F. E. MESTA.

Witnesses:
G. E. TOWNSEND,
W. D. ROWAN.